## REMARKS

This response is intended as a full and complete response to the non-final Office Action mailed June 23, 2005. In the Office Action, the Examiner notes that claims 1-19 are pending, of which claims 1-3, 5-10, 12 and 16-29 are pending and rejected. By this response, claims 1-3, 7-8, 12, 16, 23, and 27-28 are amended. Claims 5-6, 9-10, 17-22, 24-26, and 29 continue unamended.

In view of both the amendments presented above and the following discussion, Applicants submit that none of the claims now pending in the application are non-enabling, indefinite or obvious under the provisions of 35 U.S.C. §112 and §103. Thus, Applicants believe that all of these claims are now in allowable form.

It is to be understood that Applicants, by amending the claims, do not acquiesce to the Examiner's characterizations of the art of record or to Applicants' subject matter recited in the pending claims. Further, Applicants are not acquiescing to the Examiner's statements as to the applicability of the art of record to the pending claims by filing the instant responsive amendments.

## Rejections

### 35 U.S.C. §112

**Paragraph ¶1**

The Examiner has rejected claims 1-3, 5-10, 12 and 16-29 under 35 U.S.C. 112, ¶1, as failing to comply with the enablement requirement. In particular, the Examiner finds that "[T]he claim(s) contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The limitation: "a modified packet uses a matching time stamp of said received transport stream' in claims 1, 7, 12 and 27 was not described in the specification." In that the Applicants have herein amended the claims to remove the limitation "a modified packet uses a matching time stamp of said received transport stream," Applicants submit that the rejection is now moot. As such, Applicants respectfully request that the rejection be withdrawn.

**Paragraph ¶2**

The Examiner has rejected claims 8, 16-17, 23-25 and 27-29 under 35 U.S.C. §112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner states that: "Claim 8, line 2, 'CLK' is not defined"; claim 16 recites the limitation "said at least one encoded program stream" in line 5" and "[t]here is insufficient antecedent basis for this limitation in the claim"; "Claim 23 recites the limitation 'said processed output transport stream' in line 5" and "[T]here is insufficient antecedent basis for this limitation in the claim"; "Claim 27 recites the limitation 'said common time base' and 'said periodically inserted time stamps' in line 17 and 'said received transport stream' in lines 18 & 19" and [t]here are insufficient antecedent basis for these limitations in the claim"; "said slotted transport stream" in line 16 is unclear if the applicant is referring to 'a slotted transport stream' mentioned in line 11 or lines 15-16"; and "Claim 28 recites the limitation 'said corresponding time slot' in line 1, and [t]here is insufficient antecedent basis for this limitation in the claim."

In response, with respect to claim 8, Applicants have herein amended claim 8 to define 'CLK' as the clock rate of the timing signal from the transport clock source. The Applicants submit that support for this definition may be found at least on Page 6, Lines 28-30 of Applicants' specification as originally filed.

In response, with respect to claim 16, Applicants have herein amended claim 16 to replace "said at least one encoded program stream" with "said encoded program stream." As such, the Applicants respectfully submit that there is sufficient antecedent basis for "said encoded program stream."

In response, with respect to claim 23, Applicants have herein amended claim 23 to replace "said processed output transport stream" with "said output transport stream." As such, the Applicants respectfully submit that there is sufficient antecedent basis for "said output transport stream."

In response, with respect to claim 27, Applicants have herein amended claim 27 to replace "said common time base" with "a common time base." The Applicants have herein amended claim 27 to replace "said periodically inserted time stamps" with "periodically inserted time stamps." The Applicants have herein amended claim 27 to replace "produce a slotted transport stream" with "produce said slotted transport

stream." The Applicants have herein amended claim 27 to replace "each of said encoders encoding a program stream in response to a respective timing signal to produce a respective encoded program stream" with "each of said encoders encoding a program stream from a received transport stream in response to a respective timing signal to produce a respective encoded program stream," thereby providing proper antecedent basis for other references in claim 27 to the received transport stream.

In response, with respect to claim 28, Applicants have herein amended claim 28 to replace "corresponding time slot" with "desired time slot."

As such, the Applicants submit that claims 8, 16-17, 23-25 and 27-29 are definite under 35 U.S.C. §112, ¶2, and are patentable thereunder. Therefore, the Applicants respectfully request that the rejections be withdrawn.

**35 U.S.C. §103**

**Claims 1-3, 5-10 and 12-29**

The Examiner has rejected claims 1-3, 5-10 and 12-29 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,246,701 issued June 12, 2001 ("Slattery") in view of U.S. Patent No. 6,327,275 issued December 4, 2001 ("Gardner"). Applicants respectfully traverse the rejection.

In general, Slattery teaches a method and system for remultiplexing program bearing data by re-timing the program data for outputting the program data over asynchronous communication links. (Slattery, Abstract). In particular, Slattery teaches that an adapter outputs stored transport packets in a time slot that corresponds to a schedule, where the schedule times depend on the times at which the respective transport packets are received. (Slattery, Col. 10, Lines 48-55).

Slattery, however, fails to teach each and every element of Applicants' invention of at least claim 1. Namely, Slattery fails to teach or suggest at least the limitation of "including respective transport packets associated with said plurality of encoded programs within said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets

associated with the same encoded program." Specifically, Applicants' claim 1 positively recites:

> A method for forming a transport stream for transporting a plurality of encoded programs having a common time base indicated by periodically inserted time stamps, said method comprising:
>
> defining a plurality of time slots within said transport stream, wherein each time slot is associated with one of said encoded programs;
>
> including respective transport packets associated with said plurality of encoded programs within said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program; and
>
> transmitting said transport stream;
>
> wherein said encoded programs in said transport stream have said common time base indicated by said periodically inserted time stamps provided by said received transport stream.
>
> [Emphasis added.]

As such, Applicants' invention of at least claim 1 teaches including respective transport packets associated with a plurality of encoded programs within a respective plurality of time slots within a transport stream. The transport packets are included in the transport stream in a manner such that a fixed number of time slots are maintained between consecutive transport packets associated with the same encoded program. For example, as taught in Applicants' specification, assuming that transport packets from three different encoded programs (A, B, C) are included in a transport stream defined established according to Applicants' invention, the sequence of packets in the transport stream would be A1, B1, C1, A2, B2, C2, A3, and so on. As such, there are exactly two time slots between each of the transport packets associated with program A, exactly two time slots between each of the transport packets associated with program B, and exactly two time slots between each of the transport packets associated with program C.

By contrast, Slattery teaches maintaining a constant bit rate for each program in a transport stream. In particular, Slattery specifically states that "the bit rate of each program must not change to prevent TS and video decoder buffer underflow and overflow." (Slattery, Col. 5, Lines 8-11). Slattery's requirement for maintaining a constant bit-rate of each program, however, merely means that, over time, the average bit rate of the programs is constant. An average constant bit rate for each of the

programs, as taught in Slattery, simply does not teach that the program packets are evenly spaced in fixed time slots such that a fixed number of time slots are maintained between consecutive transport packets associated with the same encoded program, as taught in Applicants' invention of at least claim 1.

Furthermore, Applicants' invention of at least claim 1 teaches that inclusion of transport packets within the transport stream is performed according to the respective time slots defined for each of the encoded programs. By contrast, Slattery teaches that inclusion of packets associated with encoded program streams into a transport stream is performed using a scheduling algorithm. According to Slattery's scheduling algorithm, a packet is inserted into a time slot of a transport stream according to a packet dispatch time computed based on the time of arrival of the packet and an internal buffering delay. In particular, Slattery specifically teaches that:

> "The data link control circuit 112 is for receiving transport packets from an incoming TS or for transmitting transport packets on an outgoing TS...The data link control circuit 112 furthermore obtains the reference time from the reference clock generator 113 corresponding to the receipt time of the transport packet. The data link control circuit 112 records this time as the receipt time stamp in the descriptor that points to the transport packet storage location in which the transport packet is stored...When transmitting packets, the data link control circuit 112 retrieves descriptors for outgoing transport packets from the cache 114 and transmits the corresponding transport packets in time slots of the outgoing TS that occur when the time of the reference clock generator 113 approximately equals the dispatch times indicated in the respective descriptors." (Slattery, Col. 15, Lines 32-58).

As such, Slattery teaches that transport packets are inserted into time slots of an outgoing transport stream according to a packet departure time computed by the scheduling algorithm. Furthermore, with respect to the scheduling algorithm, Slattery specifically states "[c]onsider now the case that two transport packets are received at nearly the same time from different TSs, i.e., TS1 and TS2, and both are to be outputted in the remultiplexed transport stream TS3. Both transport packets may have different estimated departure times that nevertheless correspond to (are nearest in time to) the same transport packet time slot of the outputted remultiplexed TS TS3. The transport packet having the earliest estimated departure time...is assigned to the time slot...[t]he

other transport packet is assigned the next transport packet time slot...." (Slattery, Col 24, Line 62 – Col. 25, Line 5). This time slot contention problem described in Slattery simply could not occur in a system according to Applicants' invention of at least claim 1.

In Applicants' invention of at least claim 1, each of the constituent encoded program streams from which packets are selected for inclusion in the transport stream corresponds to an associated time slot in the transport stream. As such, as taught in Applicants' invention, each encoded program stream has a dedicated time slot in the transport stream in which packets from that encoded stream may be transmitted such that a fixed number of time slots is maintained between consecutive transport packets associated with the same encoded program. There is simply no need for the scheduling algorithm and packet contention processing, as taught in Slattery, in a system according to Applicants' invention of at least claim 1.

The insertion of transport packets into a transport stream at respective packet departure times determined by a scheduling algorithm using the respective receipt times of the transport packets, as taught in Slattery, is simply not inclusion of respective transport packets associated with a plurality of encoded programs within a plurality of time slots defined within a transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program, as taught in Applicants' invention of at least claim 1. Thus, for at least the reasons described above, Applicants' invention of at least claim 1 is completely different from the teachings of Slattery.

Therefore, Slattery is completely devoid of any teaching or suggestion of at least Applicants' limitation of "including respective transport packets associated with said plurality of encoded programs within said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program," as taught in Applicants' invention of at least claim 1. Moreover, Gardner fails to bridge the substantial gap as between Slattery and Applicants' invention of at least claim 1.

In general, Gardner teaches a system for remultiplexing variable rate bitstreams using a delay buffer and rate estimation. In particular, Gardner teaches extraction of a bitstream with specific packet types provided at different rates, and combination of the

extracted bitstream with other fixed or variable rate bit streams in a manner such that timing delivery constraints on the extracted bitstream are followed. (Gardner, Abstract). Gardner, however, fails to teach each and every element of Applicants' invention of at least claim 1. In particular, Gardner fails to teach or suggest at least the limitation of "including respective transport packets associated with said plurality of encoded programs within said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program, as taught in Applicants' invention of at least claim 1."

As taught in Applicants' invention of at least claim 1, the transport stream time slots are defined such that the packets associated with the corresponding encoded programs are evenly spaced within the transport stream. In other words, Applicants' invention maintains a fixed number of time slots between transport packets associated with the same encoded program. By contrast, Gardner teaches processing of bitstreams in which packets associated with different sources may arrive in any order. Rather, Gardner specifically teaches that an extracted bitstream is processed in parallel paths to smooth variations in the data rate. In the first path, selected packets are discarded to produce a retained data stream. The data rate of the retained data stream is estimated. In the second path, the smoothed bitstream is delayed according to the processing time of the first path, and selected packets are discarded to produce a delayed, retained data stream. Furthermore, as taught in Gardner, the retained data stream is then remultiplexed with other data streams. In particular, Gardner specifically uses the following example to describe remultiplexing of variable rate bitstreams:

> For example, assume the received data stream 1 has packets from source A, source B, and source C. For example, each source may represent a different television program or channel. In a given time interval, the following sequence of packets may he provided in the received data stream 1: A, B, C, A, A, B, C, A, A, B. Then, the data rate of source A is five packets per time interval, while the data rate of source B is three packets per time interval, and the data rate of source C is two packets per time interval. The overall data rate is fixed at ten packets per time interval.
>
> The processors 110, 120, . . . , 130 discard a portion (e.g., specific packets) of the respective received data streams 1, 2, . . . , N to provide the respective processed data streams 1, 2, . . . , N. For example, the

> processed data stream 1 may have all the "B" packets discarded, which yields the following sequence of packets: A, –, C, A, A, C, A, A, –, where "–" indicates no data. The rate of occurrence of the packets in the processed data streams may be fixed or varying in a given time interval. (Gardner, Col. 4, Lines 30-48).

It is quite clear from the portions of Gardner shown above that Gardner is specifically designed to deal with a situation that simply cannot occur in a system according to Applicants' invention of at least claim 1. In particular, Gardner teaches that packets from any source may be included within any timeslot in the transport stream. There is simply no teaching or suggestion in Gardner for defining fixed time slots within a transport stream such that each of a plurality of encoded programs transmits packets within the fixed time slots, where transmission of the packets within the fixed time slots ensures that a fixed number of time slots is maintained between consecutive transport packets associated with the same encoded program.

Furthermore, Gardner discloses that the data rate can vary from packet to packet within the received data stream according to the relative frequency of occurrence of a given packet type, and provides a mechanism for remultiplexing the variable rate packets using a delay buffer and rate estimation. As taught in Gardner, the rate control signal is computed locally using an estimated data rate determined according to the fullness level of a smoothing buffer. Moreover, Gardner specifically teaches that the output data rate is "near the rate determined by the rate estimator." (Gardner, Col 7, Lines 17-18). The use of selective packet discarding functions and bitstream rate estimation for remultiplexing variable rate bitstreams, as taught in Gardner, is simply not inclusion of transport packets associated with a respective plurality of encoded programs within a respective plurality of time slots within a transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program, as taught in Applicants' invention of at least claim 1.

Moreover, in the Office Action, the Examiner merely relies on the disclosure of Gardner for teaching that the B packets are replaced with null packets. Gardner is completely devoid of any teaching or suggestion of at least the limitation of "including respective transport packets associated with said plurality of encoded programs within

said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program," as taught in Applicants' invention of at least claim 1. As such, Gardner fails to teach or suggest Applicants' invention, as a whole.

As such, for at least the reasons discussed above, the combination of Slattery with Gardner does not result in the subject invention. Rather, the combination of the references would merely produce a system for replacing null packets with program data packets and smoothing the variable data rate of the transport stream using rate estimation prior to transmission. This is plainly not what the subject invention claims. Furthermore, there is no specific teaching or suggestion in either Slattery or Gardner for "including respective transport packets associated with said plurality of encoded programs within said plurality of time slots within said transport stream in a manner for maintaining a fixed number of time slots between consecutive transport packets associated with the same encoded program," as claimed in at least claim 1 of Applicants' invention. Accordingly, it is respectfully submitted that the combined references fail to teach or suggest Applicants' invention as a whole.

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention, Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 USPQ 416, 420 (Fed. Cir. 1986) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). The Slattery and Gardner references, both alone and in combination, fail to teach or suggest Applicants' invention as a whole.

As such, Applicants submit that independent claim 1 is not obvious and fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 7, 12, and 27 include limitations substantially similar to the limitations of claim 1. Therefore, for at least the reasons discussed above with respect

to claim 1, Applicants submit that independent claims 7, 12, and 27 are also not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

As such, Applicants submit that independent claims 1, 7, 12 and 27 are not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Furthermore, claims 2, 3, 5, 6, 8-10, 11, 16-26, and 28-29 depend from independent claims 1, 7 and 27 and recite additional features therefor. As such, and for the same reasons as discussed above, Applicants submit that these dependent claims also are not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder. Therefore, Applicants respectively request that the rejections be withdrawn.

## CONCLUSION

Thus, Applicants submit that none of the claims presently in the application are non-enabling, indefinite or obvious under the provisions of 35 U.S.C. §112 and §103. Consequently, Applicants believe that all these claims are presently in condition for allowance. Accordingly, reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Eamon J. Wall, Esq. at (732) 530-9404 so appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

E J Wall

Eamon J. Wall
Registration No. 39,414
Attorney for Applicant(s)

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CUSTOMER #46,363
PATTERSON & SHERIDAN, LLP
595 Shrewsbury Avenue, Suite 100
Shrewsbury, New Jersey 07702
732-530-9404 - Telephone
732-530-9808 – Facsimile